

REMARKS

Entry of the above amendments is respectfully requested. Claims 16, 17 and 24 have been amended. Claims 25-31 have been added. Claims 1-31 are pending in the present application. Early consideration and allowance is believed to be in order in view of the above amendments and the following remarks, and the same is respectfully requested.

Initially, Applicant wishes to thank the Examiner for the indication of allowable subject matter. Applicant has re-written allowable claim 6 in independent form and presented it as new independent claim 25, and has done the same for current allowable dependent claims 13 and 22, presenting each as new independent claims 26 and 27, respectively. Formal allowance of these claims is respectfully requested.

Rejections

The Examiner rejected claims 1-5, 10-12 and 17-20 under 35. U.S.C. § 102(b) as being anticipated by *Bamberger et al.*, U.S. Patent No. 5,854,851. In particular, the Examiner states that *Bamberger et al.* teach a method of characterizing a sample surface having a surface anomaly region including the steps of profiling, generating and measuring as defined in the corresponding claims. Applicant respectfully disagrees for the following reasons.

The preferred embodiment is directed to characterizing a sample surface having a surface anomaly, such as dishing and/or erosion of a semiconductor surface. Initially, the method includes profiling the sample surface to generate surface characteristic data. The step of "profiling" the sample surface within the context of the present application is directed to obtaining data relating to the sample surface, particularly in a direction perpendicular to the sample surface (i.e., data in the "Z" direction). It is this data that is key to determining the amount of dishing and/or erosion of the sample using, e.g., the histogram method of the preferred embodiment. Please note that although the term

“profiling” has a clear meaning from the present specification, Applicant has added new claim 28 (dependent from original claim 1) to make it clear that the profiling step is performed using a probe-based instrument movable in a direction generally perpendicular to the sample surface. Moreover, new claim 29 (dependent from new claim 28) defines the probe-based instrument as an atomic force microscope. In addition, Applicant has presented new claims 30 and 31. Claim 30 (dependent from original claim 1) highlights that the profiling step is performed using a probe-based instrument and that the surface characteristic data “is indicative of a three-dimensional image.” Finally, new claim 31 (dependent from new claim 30) defines the probe-based instrument as an “atomic force microscope.”

Bamberger et al., on the other hand, is directed to a system and method of analyzing an x-ray or mammogram. The system scans the x-ray or mammogram and generates a corresponding digital image that provides the data to be analyzed. This is performed typically using an optical device such as a CCD scanner (Col. 4, ll. 55-64). Most notably, an optical device such as a CCD scanner is unable to provide the type of precise data (e.g., three-dimensional) pertaining to the sample surface. For example, as discussed at Col. 21, ll. 35-45 of *Bamberger et al.*, the system identifies adjacent micro-calcification by measuring “three parameters corresponding to line segments, which characterize the structure of micro-calcification clusters.” The parameters include length of the line segment, number of neighbors of each micro-calcification region and the density of the micro-calcification structure. In doing so, *Bamberger et al.* teach using triangulation methods to identify the adjacent micro-calcification. Importantly, this function is achieved without analyzing any data indicative of depth or third dimension of the sample surface. The *Bamberger et al.* data is acquired and analyzed in two dimensions only, with each of the parameters noted above being identifiable in two dimensions. In other words, *Bamberger et al.* do not teach either measuring or analyzing data in “Z”, a necessary feature of measuring dishing and erosion, as in the present preferred embodiment.

More particularly, with respect to the claims, *Bamberger et al.* do not teach “profiling” the surface as that term is understood to mean generating data in a direction perpendicular to the sample surface, i.e., in “Z”. Rather, the *Bamberger et al.* system generates two-dimensional surface data (not depth) and analyzes that data by using particular techniques (such as triangulation) by identifying parameters unrelated to the “Z” dimension of the sample surface (i.e., 3-D data). As a result, *Bamberger et al.* clearly do not teach the profiling step of claim 1.

In sum, the *Bamberger et al.* system and teachings could not be used to identify regions of dishing and erosion because they do not teach a “profiling” step. Therefore, independent claim 1 and claims 2-16 dependent therefrom are novel and non-obvious, and thus define allowable subject matter over *Bamberger et al.* An indication to that effect is respectfully requested.

With respect to independent claims 17 and 24, Applicant has amended these claims to further define the surface profile data as being “indicative of a depth of the surface” (claim 17) and “three-dimensional” (claim 24). Moreover, Applicant has added dependent claims 32 and 33, dependent from claims 17 and 24, respectively, to define generating the surface profile data with a probe-based instrument. As a result, and in view of the above remarks, each of claims 17 and 24, as well as their corresponding dependent claims, including new claims 32 and 33, is allowable. An indication to this effect is respectfully requested.

CONCLUSION

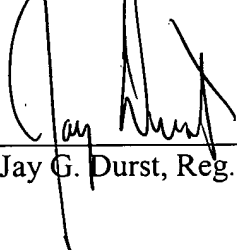
In view of the above amendments and remarks, independent claims 1, 17 and 24 are in compliance with 35 U.S.C. §§ 102, 103 and 112. Also, allowed claims 6, 13 and 21 have been presented in independent form in new claims 25-27, respectively, and as such claims 25-27 are in condition for allowance. Finally, new claims 28-33 are each dependent on an allowable claim, and thus are likewise allowable. An indication to this effect is respectfully requested.

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Enclosed is a check in the amount of \$840.00 (for nine additional claims, including three additional independent claims, and a two-month extension of time). Should the Examiner have any questions, or wish to discuss any issue further to expedite the completion of the prosecution of this case, the Examiner is invited to contact the undersigned at the below number.

The Director is authorized to direct any fees associated with this or any other communication, or credit any overpayment, to Deposit Account 50-1170.

Respectfully submitted,


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